

Features

- 2:1 Wide Input Voltage Range
- 10 Watts Output Power
- 1.6kVDC Isolation
- UL Certified
- Fixed Operating Frequency
- Six-Sided Continuous Shield
- Standard 50.8 x 25.4 x 10.2mm Package
- Efficiency to 86 %

Description

The RP10-E series DC/DC converters are certified to UL 60950-1 and cUL 60950-1. This makes them ideal for all telecom and industrial applications where approved safety standards are required. The industry standard 2" x 1" package meets military standards for thermal shock and vibration tolerance and is available with an optional remote on/off control pin. This series is also available with the /M1 option which is particularly suitable for extended temperature range applications.

Selection Guide 12V, 24V and 48V Input Types

Part Number	Input Range VDC	Output Voltage VDC	Output Current mA	Input ⁽⁴⁾ Current mA	Efficiency ⁽⁵⁾ %	Capacitive ⁽⁶⁾ Load max.
RP10-1205SE	9-18	5	2000	1082	81	4700µF
RP10-1212SE	9-18	12	830	1064	82	690µF
RP10-1215SE	9-18	15	670	1088	81	470µF
RP10-2405SE	18-36	5	2000	534	82	4700µF
RP10-2412SE	18-36	12	830	519	84	690µF
RP10-2415SE	18-36	15	670	523	84	470µF
RP10-4805SE	36-75	5	2000	260	84	4700µF
RP10-4812SE	36-75	12	830	253	86	690µF
RP10-4815SE	36-75	15	670	258	85	470µF
RP10-1205DE	9-18	±5	±1000	1068	82	±680µF
RP10-1212DE	9-18	±12	±416	1053	83	±330µF
RP10-1215DE	9-18	±15	±333	1041	84	±110µF
RP10-2405DE	18-36	±5	±1000	548	80	±680µF
RP10-2412DE	18-36	±12	±416	520	84	±330µF
RP10-2415DE	18-36	±15	±333	520	84	±110µF
RP10-4805DE	36-75	±5	±1000	267	82	±680µF
RP10-4812DE	36-75	±12	±416	254	86	±330µF
RP10-4815DE	36-75	±15	±333	260	84	±110µF

* add suffix /M1 for higher efficiencies and extended temperature range.

* add suffix /P for CTRL function with Positive Logic (1=ON, 0=OFF)

* add suffix /N for CTRL function with Negative Logic (0=ON, 1=OFF)

* add suffix -HC for premounted heatsink and clips

Ordering Examples

RP10-1205SE/P = 12V Input, 5V Output, Standard Temp. Range, Positive Logic CTRL pin fitted

RP10-4805DE/M1-HC = 48V Input, ±5V Output, Extended Temp. Range, No CTRL pin, Heatsink fitted

POWERLINE

DC/DC-Converter

with 3 year Warranty

RECOM

10 Watt

2" x 1"

Single &

Dual Output

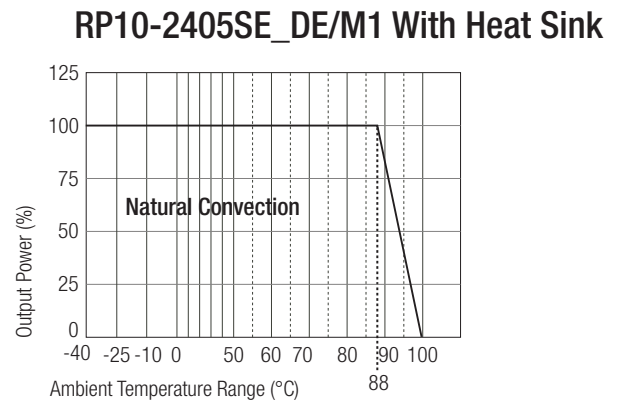
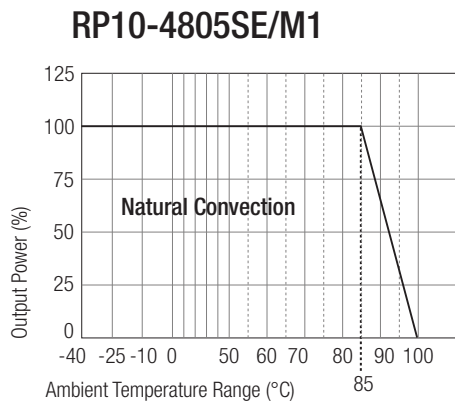
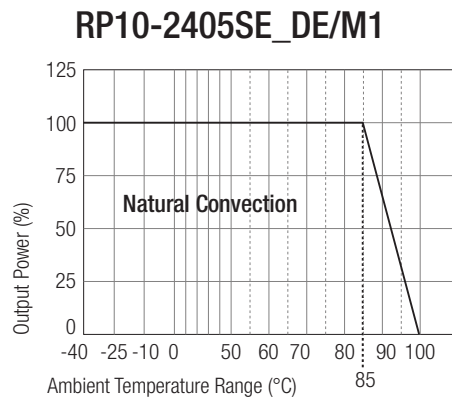
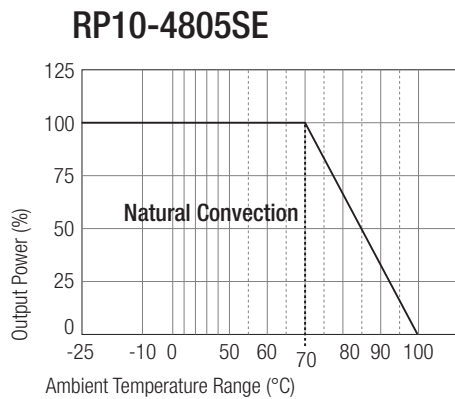
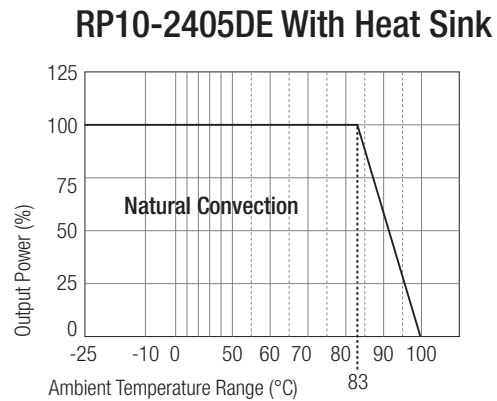
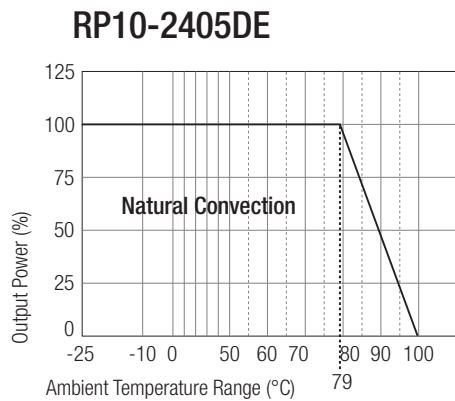
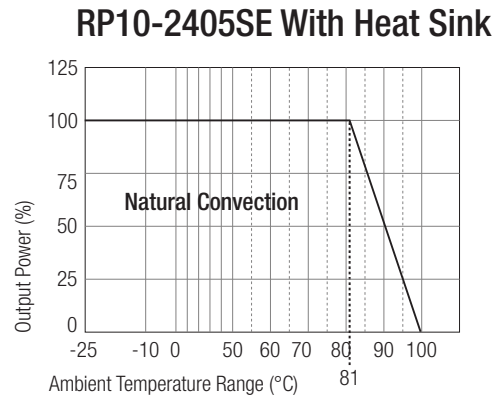
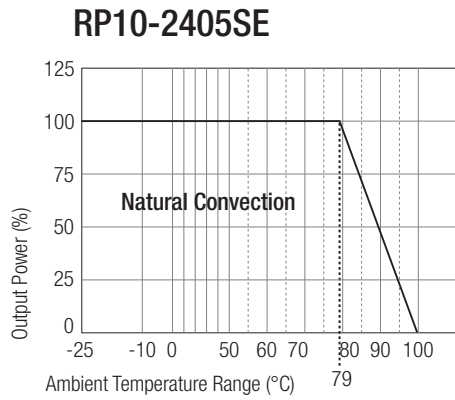


UL-60950-1 Certified
E196683

RP10-E

Refer to Application Notes

Derating Graph (Ambient Temperature)



RP10-E

Derating graphs are valid only for the shown part numbers. If you need detailed derating-information about a part-number not shown here please contact our technical support service at info@recom-development.at

Specifications (typical at nominal input and 25°C unless otherwise noted)

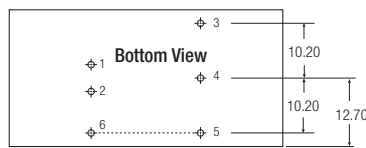
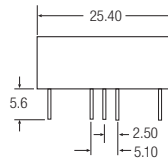
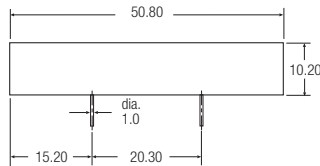
Input Voltage Range	12V nominal input	9-18VDC
	24V nominal input	18-36VDC
	48V nominal input	36-75VDC
Input Filter		Pi Type
Input Surge Voltage (100 ms max.)	12V Input	36VDC
	24V Input	50VDC
	48V Input	100VDC
Input Reflected Ripple (nominal Vin and full load) ⁽³⁾		30mA _{p-p}
Start Up Time (nominal Vin and constant resistor load)		20ms typ.
Remote ON/OFF ⁽⁷⁾		
(Positive logic)	DC-DC ON	Open or 3.5V < Vr < 12V
	DC-DC OFF	Short or 0V < Vr < 1.2V
(Negative logic)	DC-DC ON	Short or 0V < Vr < 1.2V
	DC-DC OFF	Open or 3.5V < Vr < 12V
Remote OFF input current	Nominal input	20mA
Output Power		10W max.
Output Voltage Accuracy (full Load and nominal Vin)		±2%
Minimum Load ⁽¹⁾		10% of full load
Line Regulation (low line, high line at full load)		±1%
Load Regulation (25% to 100% full load)	Single	±1%
	Dual	±2%
Cross Regulation (asymmetrical 25% <-> 100% load)		±5%
Ripple and Noise (20MHz bandwidth, with 1µF MLCC on output)	Single	50mV _{p-p}
	Dual	75mV _{p-p}
Temperature Coefficient		±0.02%/°C max.
Transient Response (25% load step change)		500µs
Over Voltage Protection	3.3V output	3.9V
Zener diode clamp	5V output	6.2V
	12V output	15V
	15V output	18V
Over Load Protection (% of full load at nominal Vin)		150% typ
Undervoltage Lockout		none
Short Circuit Protection		Hiccup, automatic recovery
Efficiency		see „Selection Guide“ table
Isolation Voltage (rated for one minute)		1600VDC
Isolation Resistance		1 GΩ min.
Isolation Capacitance		300pF max.
Operating Frequency		300kHz typ.
Approved to Safety Standards ⁽⁹⁾		UL 1950, EN60950
Operating Temperature Range (Reference Derating Curve) ⁽¹⁰⁾	Standard	-25°C to +85°C (with derating)
	M1	-40°C to +85°C (non derating)
Maximum Case Temperature		+100°C
Storage Temperature Range		-55°C to +125°C

continued on next page

Specifications (typical at nominal input and 25°C unless otherwise noted)

Thermal Impedance ⁽⁸⁾	Natural convection	12°C/Watt
	Natural convection with Heat Sink	10°C/Watt
Thermal Shock		MIL-STD-810D
Vibration		10-55Hz, 10G, 30 Min. along X, Y and Z
Relative Humidity		5% to 95% RH
Case Material		Nickel plated copper
Base Material		Non-conductive black plastic
Potting Material		Epoxy (UL94-V0)
Conducted Emissions ⁽¹¹⁾	EN55022	Level A
Radiated Emissions	EN55022	Level A
ESD	EN61000-4-2	Perf. Criteria B
Radiated Immunity	EN61000-4-3	Perf. Criteria B
Fast Transient	EN61000-4-4	Perf. Criteria B
Surge	EN61000-4-5	Perf. Criteria B
Conducted Immunity	EN61000-4-6	Perf. Criteria B
Weight		27g
Packing Quantity	Refer to App Notes for tube dimensions	9 pcs per Tube
Dimensions		50.8 x 25.4 x 10.2mm
MTBF ⁽²⁾		1976 x 10 ³ hours

Package Style and Pinning (mm)



Pin Connections

Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	No Pin	Com
5	-Vout	-Vout
6*	CTRL*	CTRL*

*Optional. See Note 7.

Pin Pitch Tolerance ±0.35 mm

Notes :

- The RP10 (W) series required a minimum 10% loading on the output to maintain specified regulation.
Operation under no-load condition will not damage these devices, however they may not meet all listed specification.
- BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment).
- Simulated source impedance of 12µH. 12µH inductor in series with +Vin.
- Maximum value at nominal input voltage and full load of standard type.
- Typical value at nominal input voltage and full load.
- Test by minimum Vin and constant resistor load.
- The ON/OFF control function can be positive or negative logic. The pin voltage is referenced to negative input.
Positive logic ON/OFF is marked with suffix-P (eg. RP10-2405SE/P), Negative logic ON/OFF is marked with suffix-N (eg. RP10-2405SE/N).
If no suffix is specified, the control pin will be omitted.
- Heat sink is optional and P/N: 7G-0020C. Powerline DC/DC Converters can be ordered with pre-mounted heatsinks including antivibration fixing clips (add suffix -HC). See Application Notes for heatsink details.
- The M1 version (RP10-xxxxSE/M1, RP10-xxxxDE/M1) does not carry the UL certification.
- M1 version is more efficient, therefore, it can be operated in a more extensive temperature range than standard version.
- See application notes for EMI-filtering.

The product information and specifications are subject to change without prior notice. All products are designed for non-safety critical commercial and industrial applications.
The Buyer agrees to implement safeguards that anticipate the consequences of any failures that might cause harm, loss of life and/or damage property.